



JC01 Rec'd PCT/PTO 0.5 JUL 2005

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Docket No: Q85151

Makoto SAKAGAMI, *et al.*

Appln. No.: 10/517,009

Group Art Unit: 3723

Confirmation No.: 1293

Examiner: Unknown

Filed: December 6, 2004

For: NUMERICAL CONTROL APPARATUS

**REQUEST FOR CORRECTED NOTICE OF ACCEPTANCE OF APPLICATION UNDER 35
U.S.C. 371 AND 37 C.F.R. 1.494 or 1.495**

ATTN:

Commissioner for Patents and Trademarks

P.O. Box 1450

Alexandria, VA 22313-1450

Sir:

We enclose a copy of the Notice of Acceptance of Application under 35 U.S.C. § and 37 C.F.R. for the above-identified application and request the following correction(s):

I.A. FILING DATE: ~~05/04/2003~~ 05/14/2003

Verification for the requested correction(s) is indicated on the Publication filed Concurrently herewith.

Respectfully submitted,

Richard C. Turner

Registration No. 29,710

SUGHRUE MION, PLLC

Telephone: (202) 293-7060

Facsimile: (202) 293-7860

WASHINGTON OFFICE

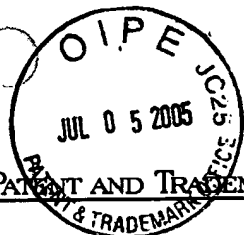
23373

CUSTOMER NUMBER

Date: July 5, 2005



UNITED STATES PATENT AND TRADEMARK OFFICE



UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

U.S. APPLICATION NUMBER NO.	FIRST NAMED APPLICANT	ATTY. DOCKET NO.
10/517,009	Makoto Sakagami	Q85151

INTERNATIONAL APPLICATION NO.

PCT/JP03/06014

I.A. FILING DATE

PRIORITY DATE

23373
SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

DOCKED

JUN 10 2005

5/14/2003 - 05/04/2003

CONFIRMATION NO. 1293

371 ACCEPTANCE LETTER



OC000000016118004

Date Mailed: 06/03/2005

NOTICE OF ACCEPTANCE OF APPLICATION UNDER 35 U.S.C 371 AND 37 CFR 1.495

The applicant is hereby advised that the United States Patent and Trademark Office in its capacity as a Designated / Elected Office (37 CFR 1.495), has determined that the above identified international application has met the requirements of 35 U.S.C. 371, and is **ACCEPTED** for national patentability examination in the United States Patent and Trademark Office.

The United States Application Number assigned to the application is shown above and the relevant dates are:

12/06/200412/06/2004

DATE OF RECEIPT OF 35 U.S.C. 371(c)(1), (c)(2) and
(c)(4) REQUIREMENTS

DATE OF COMPLETION OF ALL 35 U.S.C. 371
REQUIREMENTS

A Filing Receipt (PTO-103X) will be issued for the present application in due course. **THE DATE APPEARING ON THE FILING RECEIPT AS THE " FILING DATE" IS THE DATE ON WHICH THE LAST OF THE 35 U.S.C. 371 (c)(1), (c)(2) and (c)(4) REQUIREMENTS HAS BEEN RECEIVED IN THE OFFICE. THIS DATE IS SHOWN ABOVE.** The filing date of the above identified application is the international filing date of the international application (Article 11(3) and 35 U.S.C. 363). Once the Filing Receipt has been received, send all correspondence to the Group Art Unit designated thereon.

The following items have been received:

- Copy of the International Application filed on 12/06/2004
- Copy of the International Search Report filed on 12/06/2004
- Information Disclosure Statements filed on 12/06/2004
- Oath or Declaration filed on 12/06/2004
- Request for Immediate Examination filed on 12/06/2004
- U.S. Basic National Fees filed on 12/06/2004
- Assignment filed on 12/06/2004

Applicant is reminded that any communications to the United States Patent and Trademark Office must be mailed to the address given in the heading and include the U.S. application no. shown above (37 CFR 1.5)

SHELBY J VIGIL

Telephone: (703) 308-9140 EXT 224

PART 1 - ATTORNEY/APPLICANT COPY

FORM PCT/DO/EO/903 (371 Acceptance Notice)

(19) 世界知的所有権機関
国際事務局



(43) 国際公開日
2004 年 11 月 25 日 (25.11.2004)

PCT

(10) 国際公開番号
WO 2004/102290 A1

(51) 国際特許分類: G05B 19/18

(21) 国際出願番号: PCT/JP2003/006014

(22) 国際出願日: 2003 年 5 月 14 日 (14.05.2003)

(25) 国際出願の言語: 日本語

(26) 国際公開の言語: 日本語

(71) 出願人 (米国を除く全ての指定国について): 三菱電機株式会社 (MITSUBISHI DENKI KABUSHIKI KAISHA) [JP/JP]; 〒100-8310 東京都千代田区丸の内二丁目 2 番 3 号 Tokyo (JP).

丸の内二丁目 2 番 3 号 三菱電機株式会社内 Tokyo (JP). 竜正城 (RYU, Masaki) [JP/JP]; 〒100-8310 東京都千代田区丸の内二丁目 2 番 3 号 三菱電機株式会社内 Tokyo (JP).

(74) 代理人: 宮田 金雄, 外 (MIYATA, Kaneo et al.); 〒100-8310 東京都千代田区丸の内二丁目 2 番 3 号 三菱電機株式会社内 Tokyo (JP).

(81) 指定国 (国内): CN, DE, JP, KR, US.

添付公開書類:
— 国際調査報告書

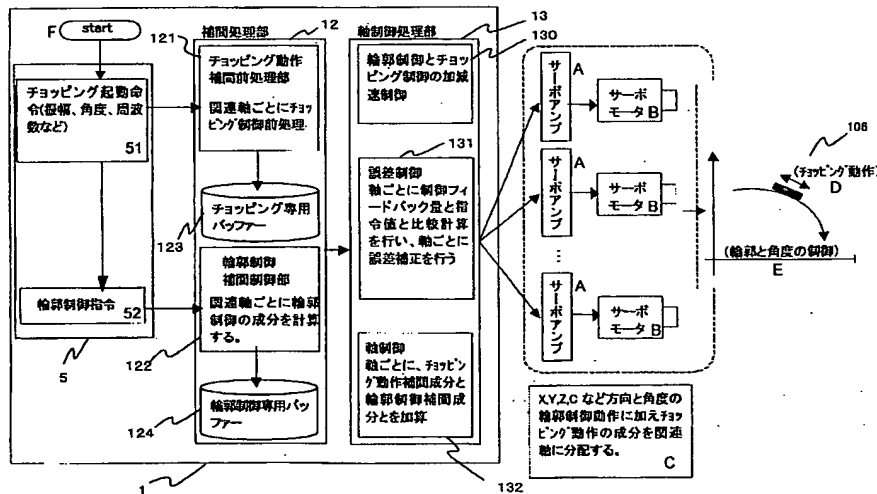
(72) 発明者: および

(75) 発明者/出願人 (米国についてのみ): 坂上 信 (SAKAGAMI, Makoto) [JP/JP]; 〒100-8310 東京都千代田区

2 文字コード及び他の略語については、定期発行される各 PCT ガゼットの巻頭に掲載されている「コードと略語のガイダンスノート」を参照。

(54) Title: NUMERIC CONTROLLER

(54) 発明の名称: 数値制御装置



(57) Abstract: A numeric controller capable of performing chopping control machining without providing an additional axis dedicated to chopping and provided, at the interpolating section (12) and the axis controlling section (13), with a movement data generating function and a chopping operation correcting function for controlling two or more control axes simultaneously in the chopping operation so that the chopping operation can be corrected while taking account of the movement error including the contour control of a positioning axis or a rotational axis.

(57) 要約: チョッピング専用の軸を付加することなくチョッピング制御加工を行うことができ、またチョッピング動作の補正として、位置決め軸や回転軸などの輪郭制御を含めた移動誤差を考慮した補正ができるよう、2 軸以上の制御軸を同時制御してチョッピング動作させる移動データの生成機能、及びチョッピング動作の補正機能を、補間処理部 12 及び軸制御処理部 13 に設けた。

- 51...CHOPPING START INSTRUCTION (AMPLITUDE, ANGLE, FREQUENCY, AND THE LIKE)
- 52...CONTOUR CONTROL INSTRUCTION
- 12...INTERPOLATING SECTION
- 121...CHOPPING OPERATION INTERPOLATION PREPROCESSING CHOPPING CONTROL PREPROCESSING FOR EACH RELATED AXIS
- 123...BUFFER DEDICATED TO CHOPPING
- 122...CONTOUR CONTROL INTERPOLATION CONTROL SECTION CALCULATE CONTOUR CONTROL COMPONENT FOR EACH RELATED AXIS
- 124...BUFFER DEDICATED TO CONTOUR CONTROL
- 132...AXIS CONTROL PROCESSING SECTION
- 130...ACCELERATION/DECELERATION CONTROL OF CONTOUR CONTROL AND CHOPPING CONTROL
- 131...ERROR CONTROL PERFORM COMPARISON CALCULATION BETWEEN CONTROL FEEDBACK AMOUNT AND COMMAND VALUE FOR EACH AXIS, AND CORRECT ERROR FOR EACH AXIS
- 132...AXIS CONTROL ADD CHOPPING OPERATION INTERPOLATION COMPONENT AND CONTOUR CONTROL INTERPOLATION COMPONENT FOR EACH AXIS
- A...SERVO AMPLIFIER
- B...SERVO MOTOR
- C...IN ADDITION TO CONTOUR CONTROL OF DIRECTIONS X,Y,Z,C AND ANGLE, DISTRIBUTE CHOPPING OPERATION COMPONENT TO RELATED AXES
- D...CHOPPING OPERATION
- E...CONTROL OF CONTOUR AND ANGLE



PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Docket No: Q85151

Makoto SAKAGAMI, *et al.*

Appln. No.: 10/517,009

Group Art Unit: 3723

Confirmation No.: 1293

Examiner: Unknown

Filed: December 6, 2004

For: NUMERICAL CONTROL APPARATUS

REQUEST FOR CORRECTED OFFICIAL FILING RECEIPT

ATTN: Office of Initial Patent Examination
Filing Receipt Correction
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

We enclose a copy of the Official Filing Receipt for the above-identified application and request the following correction(s):

Domestic Priority data as claimed by applicant date: This application is a 371 of PCT/JP03/06014
05/04/2003 05/14/2003

Title: ~~Numeric controller~~ Numerical Control Apparatus

Verification for the requested correction(s) is indicated on the Publication filed Concurrently herewith.

Respectfully submitted,

Richard C. Turner
Registration No. 29,710

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE

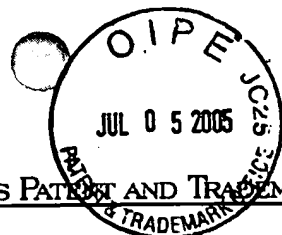
23373

CUSTOMER NUMBER

Date: July 5, 2005



UNITED STATES PATENT AND TRADEMARK OFFICE



UNITED STATES DEPARTMENT OF COMMERCE
 United States Patent and Trademark Office
 Address: COMMISSIONER FOR PATENTS
 P.O. Box 1450
 Alexandria, Virginia 22313-1450
 www.uspto.gov

APPL NO.	FILING OR 371 (c) DATE	ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	DRAWINGS	TOT CLMS	IND CLMS
10/517,009	12/06/2004	3723	1250	Q85151	10	7	2

CONFIRMATION NO. 1293

23373
 SUGHRUE MION, PLLC
 2100 PENNSYLVANIA AVENUE, N.W.
 SUITE 800
 WASHINGTON, DC 20037

FILING RECEIPT



OC000000016118003

Date Mailed: 06/03/2005

Receipt is acknowledged of this regular Patent Application. It will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please mail to the Commissioner for Patents P.O. Box 1450 Alexandria Va 22313-1450. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections (if appropriate).

Applicant(s)

Makoto Sakagami, Tokyo, JAPAN;
 Masaki Ryu, Tokyo, JAPAN;

Power of Attorney: The patent practitioners associated with Customer Number 23373.

Domestic Priority data as claimed by applicant

This application is a 371 of PCT/JP03/06014 ~~05/04/2003~~ 5/14/2003

Foreign Applications

Projected Publication Date: To Be Determined - pending completion of Security Review

Non-Publication Request: No

Early Publication Request: No

Title

~~Numeric controller~~ Numerical Control Apparatus

Preliminary Class

**LICENSE FOR FOREIGN FILING UNDER
Title 35, United States Code, Section 184
Title 37, Code of Federal Regulations, 5.11 & 5.15**

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Office of Export Administration, Department of Commerce (15 CFR 370.10 (j)); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

(19) 世界知的所有権機関
国際事務局



(43) 国際公開日
2004 年 11 月 25 日 (25.11.2004)

PCT

(10) 国際公開番号
WO 2004/102290 A1

(51) 国際特許分類: G05B 19/18

(21) 国際出願番号: PCT/JP2003/006014

(22) 国際出願日: 2003 年 5 月 14 日 (14.05.2003)

(25) 国際出願の言語: 日本語

(26) 国際公開の言語: 日本語

(71) 出願人 (米国を除く全ての指定国について): 三菱電機株式会社 (MITSUBISHI DENKI KABUSHIKI KAISHA) [JP/JP]; 〒100-8310 東京都千代田区丸の内二丁目 2 番 3 号 Tokyo (JP).

丸の内二丁目 2 番 3 号 三菱電機株式会社内 Tokyo (JP). 竜正城 (RYU, Masaki) [JP/JP]; 〒100-8310 東京都千代田区丸の内二丁目 2 番 3 号 三菱電機株式会社内 Tokyo (JP).

(74) 代理人: 宮田 金雄, 外 (MIYATA, Kaneo et al.); 〒100-8310 東京都千代田区丸の内二丁目 2 番 3 号 三菱電機株式会社内 Tokyo (JP).

(81) 指定国 (国内): CN, DE, JP, KR, US.

添付公開書類:
— 国際調査報告書

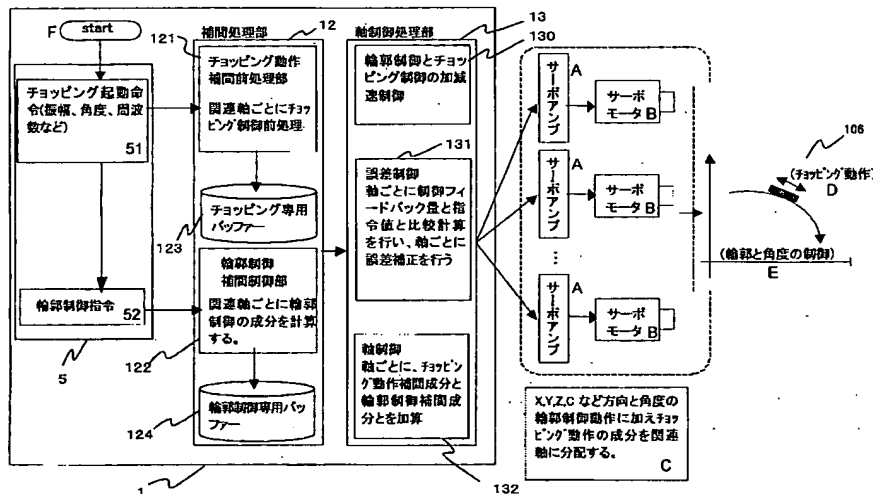
(72) 発明者; および

(75) 発明者/出願人 (米国についてのみ): 坂上 信 (SAKAGAMI, Makoto) [JP/JP]; 〒100-8310 東京都千代田区

2 文字コード及び他の略語については、定期発行される各 PCT ガゼットの巻頭に掲載されている「コードと略語のガイダンスノート」を参照。

(54) Title: NUMERIC CONTROLLER

(54) 発明の名称: 数値制御装置



51...CHOPPING START INSTRUCTION (AMPLITUDE, ANGLE, FREQUENCY, AND THE LIKE)
52...CONTOUR CONTROL INSTRUCTION
12...INTERPOLATING SECTION
121...CHOPPING OPERATION INTERPOLATION PREPROCESSING
CHOPPING CONTROL PREPROCESSING FOR EACH RELATED AXIS
123...BUFFER DEDICATED TO CHOPPING
122...CONTOUR CONTROL INTERPOLATION CONTROL SECTION
CALCULATE CONTOUR CONTROL COMPONENT FOR EACH RELATED AXIS
124...BUFFER DEDICATED TO CONTOUR CONTROL
13...AXIS CONTROL PROCESSING SECTION
130...ACCELERATION/DECELERATION CONTROL OF CONTOUR CONTROL AND CHOPPING CONTROL
131...ERROR CONTROL
PERFORM COMPARISON CALCULATION BETWEEN CONTROL FEEDBACK
AMOUNT AND COMMAND VALUE FOR EACH AXIS, AND CORRECT ERROR FOR EACH AXIS
132...AXIS CONTROL
ADD CHOPPING OPERATION INTERPOLATION COMPONENT AND CONTOUR CONTROL INTERPOLATION
COMPONENT FOR EACH AXIS
A...SERVO AMPLIFIER
B...SERVO MOTOR
C...IN ADDITION TO CONTOUR CONTROL OF DIRECTIONS X,Y,Z,C AND ANGLE, DISTRIBUTE CHOPPING
OPERATION COMPONENT TO RELATED AXES
D...CHOPPING OPERATION
E...CONTROL OF CONTOUR AND ANGLE

(57) Abstract: A numeric controller capable of performing chopping control machining without providing an additional axis dedicated to chopping and provided, at the interpolating section (12) and the axis controlling section (13), with a movement data generating function and a chopping operation correcting function for controlling two or more control axes simultaneously in the chopping operation so that the chopping operation can be corrected while taking account of the movement error including the contour control of a positioning axis or a rotational axis.

(57) 要約: チョッピング専用の軸を付加することなくチョッピング制御加工を行うことができ、またチョッピング動作の補正として、位置決め軸や回転軸などの輪郭制御を含めた移動誤差を考慮した補正ができるよう、2 軸以上の制御軸を同時制御してチョッピング動作させる移動データの生成機能、及びチョッピング動作の補正機能を、補間処理部 12 及び軸制御処理部 13 に設けた。

Declaration and Power of Attorney for Patent Application

特許出願宣言書および委任状

Japanese Language Declaration

日本語宣言書



私は下記発明者として以下の通り宣言します：

As a below named inventor, I hereby declare that:

私の住所、郵送先、および国籍は私の氏名の後に記載された通りです。

My residence, mailing address and citizenship are as stated next to my name.

下記名称の発明に関し請求範囲に記載され特許出願がされている発明内容につき、私が最初、最先かつ唯一の発明者（下記氏名が一つの場合）であるか、あるいは最初、最先かつ共同発明者（下記氏名が複数の場合）であると信じます。

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

NUMERICAL CONTROL APPARATUS

下記項目に×印が付いている場合を除き、上記発明の明細書は本書に添付されます。

the specification of which is attached hereto unless the following box is checked:

☐ 上記発明は米国出願番号あるいはPCT国際出願番号（確認番号_____）として____年__月__日に出願され、____年__月__日に補正されました（該当する場合）。

☒ was filed on May 14, 2003
as United States Application Number or
PCT International Application Number
PCT/JP03/06014 (Conf. No. _____)
and was amended on _____
(if applicable).

私は特許請求範囲を含み上述の補正で補正された前記明細書の内容を検討し、理解していることをここに表明します。

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

私は連邦規則法典第 37 編 1 条 56 項に定義される特許性に肝要な情報について開示義務があることを認めます。

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56.

Japanese Language Declaration

日本語宣言書

私は米国法典第 35 編 119 条(a)-(d)あるいは 365 条(b)に基づき特許あるいは発明者証書の下記外国出願、または 365 条(a)に基づき米国以外の少なくとも 1 ケ国を指定した下記 PCT 外国出願についての外国優先権をここに主張するとともに、下記項目に×印を付けることにより優先権を主張する出願以前の出願日を有する特許あるいは発明者証書の外国出願あるいは PCT 外国出願を示します。

I hereby claim foreign priority under Title 35, United States Code, § 119(a)-(d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT International application which designated at least one country other than the United States, listed below, and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed.

Prior foreign application(s)
外国での先行出願

Priority Claimed
優先権の主張

Yes No
有り 無し
☐ ☐

(Number) (Country)
(番号) (国名)

(Day/Month/Year Filed)
(出願年月日)

(Number) (Country)
(番号) (国名)

(Day/Month/Year Filed)
(出願年月日)

☐ ☐

私は米国法典第 35 編 119 条(e)に基づき下記の米国仮特許の利益をここに主張します。

I hereby claim the benefit under Title 35, United States Code, § 119(e) of any United States provisional application(s) listed below.

(Application No.)
(出願番号)

(Filing Date)
(出願日)

(Application No.)
(出願番号)

(Filing Date)
(出願日)

私は米国法典第 35 編 120 条に基づき下記米国特許出願、あるいは 365 条(c)に基づき米国を指定する下記 PCT 国際特許出願の利益をここに主張し、本特許出願内特許請求範囲の各項目の内容が米国法典第 35 編 112 条の最初の項に規定される方法により先行米国あるいは PCT 国際特許出願で開示されていない限りにおいて連邦規則法典第 37 編 1 条 56 項に定義される特許性に肝要で、先行特許出願の出願日から本特許出願の国内あるいは PCT の出願日までの間に入手された情報について開示義務があることを認めます。

I hereby claim the benefit under Title 35, United States Code, § 120 of any United States application(s), or § 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application.

(Application No.) (Filing Date)
(出願番号) (出願日)

(Status: patented, pending, abandoned)
(状態: 特許成立済、係属中、放棄済)

(Application No.) (Filing Date)
(出願番号) (出願日)

(Status: patented, pending, abandoned)
(状態: 特許成立済、係属中、放棄済)

私は本宣言書内で私自身の知識に基づいてなされたすべての陳述が真実であり、情報および信ずるところに基づいてなされたすべての陳述が真実であると信じられていることをここに宣言し、さらに故意になされた虚偽の陳述等々は米国法典第 18 編 1001 条に基づき罰金あるいは拘禁または両方による処罰にあたり、またかような故意による虚偽の陳述はそれに基づく特許出願あるいは成立特許の有効性を危うくする可能性があることを認識した上でこれらの陳述をなしたことを宣言します。

I hereby declare that all statements made herein of my own knowledge and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Japanese Language Declaration

日本語宣言書

委任状：私は下記の米国特許商標局（USPTO）顧客番号のもとに記載される SUGHRUE MION 法律事務所のすべての弁護士を、同顧客番号のもとに記載される個々の弁護士は SUGHRUE MION 法律事務所のための自由裁量に基づき変更され得ることを認識した上で、本特許出願の続きおよびそれに関わる特許商標局との業務を遂行する弁護士として指名し、本特許出願に関するすべての通信が同 USPTO 顧客番号のもとに提出された住所宛に送付されることを要請します。

POWER OF ATTORNEY: I hereby appoint all attorneys of SUGHRUE MION, PLLC who are listed under the USPTO Customer Number shown below as my attorneys to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith, recognizing that the specific attorneys listed under that Customer Number may be changed from time to time at the sole discretion of SUGHRUE MION, PLLC, and request that all correspondence about the application be addressed to the address filed under the same USPTO Customer Number.



23373

PATENT TRADEMARK OFFICE

電話連絡は下記へ：（名前および電話番号）

Direct Telephone Calls to: (name and telephone number)

SUGHRUE MION, PLLC
(202) 293-7060

SUGHRUE MION, PLLC
(202) 293-7060

Full name of sole or first inventor 唯一あるいは第一の発明者名		Makoto SAKAGAMI	
Inventor's signature 発明者の署名	MAKOTO SAKAGAMI		Date 日付 November 26, 2004
Residence 住所		Tokyo, Japan	
Citizenship 国籍		Japan	
Mailing Address 郵送先		c/o Mitsubishi Denki Kabushiki Kaisha, 2-3, Marunouchi 2-chome, Chiyoda-ku, Tokyo 100-8310, Japan	
Full name of second joint inventor, if any 第二の共同発明者名（該当する場合）		Masaki RYU	
Second inventor's signature 第二発明者の署名	Masaki Ryu		Date 日付 November 26, 2004
Residence 住所		Tokyo, Japan	
Citizenship 国籍		Japan	
Mailing Address 郵送先		c/o Mitsubishi Denki Kabushiki Kaisha, 2-3, Marunouchi 2-chome, Chiyoda-ku, Tokyo 100-8310, Japan	